

**POLISH FARM MACHINERY MARKET
AFTER ACCESSION TO THE EUROPEAN UNION –
PRODUCTION AND SUPPLY OF MEANS
OF AGRICULTURAL MECHANIZATION**

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Abstract. After accession to the EU in 2004 the demand for tractors and agricultural implements has grown, followed by increasing supply of them. In 2012, the supply of brand-new agricultural tractors was by 185.4% higher than in 2003. In 2012 the value of renovation index of tractor fleet in agriculture was by 149.3% higher than in 2003. In spite of significant increase of demand for tractors, their production in 2012 was by 39.2% lower than in 2003. The downfall in number of tractors produced in Poland caused that imported tractors achieved more and more important share in supplies on Polish market. In 2003 the share of imports amounted to 64.0% and in 2012 – 91.4%. Production of most other means of agricultural mechanization was in 2012 higher than in 2003. The increase in a case of manure spreaders amounted to 704.3%; self loading or unloading agricultural tractor trailers – 362.1%; fertilizer spreader – 335.2%; field sowing machines – 245.3%; pick-up balers – 222.1% and harvester threshers – 194.8. Decreases were noted in cases of steamers – by 73.3%; potato planters – by 49.7%; harrows other than disc ones – by 42.2%; potato diggers – by 31.2% and rototillers – by 22.8%.

Key words: farm machinery, home supply, production

INTRODUCTION

Accession of Poland to the European Union (EU) improved the situation of Polish farmers thanks to implementation of Common Agricultural Policy (CAP). After integration with the EU clear improvement of investment processes in Polish agriculture has

been observed. Results of research carried out in 2009 and 2010 on 53 farms of 8.5 to 150 hectares of agricultural land enable a positive appreciation of the investment activity of owners of these farms [Wójcicki and Kurek 2011, Wójcicki and Rudeńska 2013]. In spite of increasing tendency in a case of ability to invest in farm machinery, its level was insufficient to prevent depreciation of fixed assets in the whole agriculture. Improvement of the situation would be possible on condition that tendency of growing degree of wear of the assets would be stopped. On the other hand, awareness is necessary of the considerable differentiation in relation to investment activity with regard to the scale of production. It can be supposed, that started investment processes will bring multiplied effects to a part of farms which will actively use the investment support under the CAP instruments and preferential credits. It will intensify the processes of polarization in agriculture [Grzelak 2013]. It is known that fragmentation of farms is an important factor of differentiation of farmers' activity in applying for funds, because it usually implies their weak economic strength and thus limits the possibilities for further development [Poczta and al. 2012].

The analysis based on the results of the implementation of investment programs financed from EU agricultural funds in Poland showed that in subsequent programs the support for farms' technological modernisation increased. In each program majority of the funds was spent on farm machinery. Most of the funds went to the central regions of the country, where agricultural structures are relatively good and agriculture is considered as better developed. The investment funds strengthen the competitiveness of these regions [Czubak 2012].

In the farm machinery industry, a system transformation in Poland, started in 1989, caused not only property changes but also significant decreases of the production volume due to decreasing demand from the side of Polish farmers [Waszkiewicz 2009 b]. The home demand decides about a level of production and imports of farm machines [Waszkiewicz 2009 a]. After 2008 production of tractors in Poland dramatically decreased [Pawlak 2010 b, 2012 a]. As a result, the role of Poland among World and European producers of agricultural tractors decreased [Pawlak 2012 b].

Instead, the supply and registrations of tractors after Poland's accession to the EU increased significantly. The results of study on the Central Statistical Office (GUS) data showed that within years 2005-2010 the farmers purchased in total 184.3 thou. tractors, 28.6% (52.8 thou.) the brand-new tractors inclusive [Środki... 2011]. In majority of voivodeships the number of tractors increased (by 2.2% in Lubuskie, up to 15.7% in Podlaskie). In four voivodeships reduced number of tractors was noted – by 1.5% in Zachodniopomorskie, up to 6.0% in Opolskie [Pawlak 2012 c]. Most of the new tractors per unit of agricultural land (733 pcs. per 100 000 ha AL) were purchased by the farmers – owners of farms of acreage 30-50 ha AL. The number of bought brand-new tractors, as accounted per 100 farms, increased with the acreage of farms (from 0.06 pcs. in farms below 1 ha, up to 240.14 pcs. in farms of acreage 1000 ha AL and more). With enlargement of farm acreage also the power of tractors purchased increased. Renovation rate of the tractor fleet resources (number of brand-new tractors bought within a year, as accounted per 1000 tractors being in the use on farms) ranged from 1.3 pcs. in farms below 1 ha, up to 28.1 pcs. on farms of the acreage 100-200 ha AL; on average – 6.55 pcs. Percentage share of brand-new tractors in purchases grew with increasing area of agricultural land on the farms. It amounted to 9.4% for the farms of acreage group 1-5 ha, whereas for the farms of acreage 1000 ha AL and more – 71.4%. Fitting the parameters of

purchased tractors was generally suitable to the needs of farms. Cases of occurring high power tractors in the purchases for farms of acreage below 5 ha AL may be justified by their appropriation for the service purposes [Pawlak 2013 a]. Results of analysis basing on a method taking into account the structure of purchasing brand-new tractors, as depended on the farm acreage of purchasers and the power structure of purchased tractors shown that real effects of tractor fleet modernization – as a result of purchasing brand-new tractors within the years 2005-2010 – are almost twenty times higher than those calculated on the basis of mean values, neglecting the structure of purchasers and the tractor power [Pawlak 2013 b].

Fluctuations of situation in agriculture and in national economy as a whole have their effects on farm machinery market. Therefore, the current monitoring concerning this market is necessary. Analyses of demand for farm machines and studies of factors affecting the demand are the base for planning the scale and structure of production in farm machinery industry. Rational adaptation level and assortment of production to the possibility of sale makes it possible to keep production costs on favourable level. Under such conditions the moderate price level of produced machinery is possible. All this helps to achieve competitiveness on market and stimulates the demand [Pawlak 2010 a].

The purpose of this article is an analysis of trends in supply and production of means of agricultural mechanisation during the years 2004-2013.

MATERIAL AND METHODS

Data of the Central Statistical Office [Production... 2003, 2005, 2007, 2009, 2011, 2013, Środki... 2011], concerning production, imports and exports and prices of farm machinery, as well as results of Agricultural Census of 2010 have been used as a base for analyses of situation on the Polish farm machinery market. Home demand for tractors and selected farm machines has been estimated as related to home supply, calculated as sum of production and imports and diminished by exports:

$$Smr = Pmr + Imr - Exmr \quad (1)$$

where:

Smr – home supply of m-th machine within r-th year (units),

Pmr – production in Poland of m-th machine within r-th year (units),

Imr – imports of m-th machine within r-th year (units),

Exmr – exports of m-th machine within r-th year (units).

Values received in this way cannot be identified with annual sales of particular machines, because the data concerning dealers' stores stocks at the beginning and end in particular years are not available. Some supplementary knowledge on demand for farm machinery in Poland is provided by the data of the Agricultural Census 2010 [Środki... 2011].

The resources of farm machinery on Polish farms were growing mostly due to lack of cassation. Such a situation hampered the technological progress in agriculture. It is then necessary to observe the changes of this situation. This can be carried out by analysing trends in the rate of the tractor fleet renovation in agriculture. In this study the relevant index has been calculated using the formula:

$$R_{tr} = \frac{N_{tsr}}{1000 \cdot N_{tur}} \quad (2)$$

where:

R_{tr} – index of renovation of tractor fleet in agriculture;

N_{tsr} – supply of tractors within r-th year (units);

N_{tur} – number of tractors in use in r-th year (units).

The method of regression analysis has been used in order to evaluate effects of the index value showing relations between price of the set and gross value added as well as the gross value added itself on tractors' supply in Polish agriculture. Most accurate trend line has been found by choosing between five different trend or regression types: linear, logarithmic, polynomial, power and exponential. The one with highest R-square value has been selected.

RESULTS AND DISCUSSION

Rise in prices of farm machinery after Poland's 2004 accession to the EU was compensated by implementation of the Common Agricultural Policy in our country. Under The European Agricultural Fund for Rural Development (EAFRD), Poland received EUR 13.2 billion that together with the national funds constitute a total budget in the amount of EUR 17.2 billion for development of food, agriculture and rural areas. This enabled the continuation of the modernisation and development process in Polish agriculture and rural areas, launched in the previous years. The Agency of Modernisation and Restructuring of Agriculture, being the body that makes payments to farmers in frames of the RDP for 2007-2013 (PROW 2007-2013), designed about EUR 4 billion to support investments in farm machinery. Polish farmers used the funds in 265 thou. purchases of tractors and implements which were realised mostly within the measure "Modernisation of agricultural holdings".

As a result, the demand for tractors and agricultural implements has grown, followed by increasing supply of these means of production. In 2012, the supply of agricultural tractors was by 65.9% higher than in 2003 – last year before the accession. In a case of brand-new tractors the increase was even more marked. It amounted 185.4% (Table 1).

Among the supplied brand-new tractors the share of higher power types increased (Fig. 1).

Increase of supply for brand-new agricultural tractors and implements was an important factor enabling technical modernisation of Polish agriculture. The index of renovation of machinery fleet in agriculture can be used as an indicator of the modernisation. Unfortunately, GUS data concerning imports and exports of farm machinery other than tractors do not show division between brand-new and second-hand ones. Therefore, the index of renovation can be calculated only for tractors. Its value within the years 2003-2012 fluctuated, but it was in 2012 by 149.3% higher than in 2003 (Fig. 2).

The discussed below data on supply of means of mechanisation include both brand new and second-hand units. Highest increases in home supply were noted in case of tractor cultivators and rototillers: in 2012 over 13 times more units of them were put on Polish market, as compared with 2003. At the same time the supply of manure spreaders

Table 1. Supply of means of agricultural mechanization (units in years)
 Tabela 1. Podaż krajowa środków mechanizacji rolnictwa (sztuk w latach)

Products Wyroby	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1	2	3	4	5	6	7	8	9	10	11
Agricultural Tractors Ciągniki rolnicze	13 837	13 487	13 154	18 524	24 222	22 310	14 356	20 159	18 295	22 953
including brand-new w tym fabrycznie nowe	7 491	9 983	9 831	13 401	18 553	17 712	11 793	17 541	15 911	21 382
Agricultural trailers Przyczepy dla celów rolniczych	1 350	2 634	4 005	3 499	6 879	7 008	4 856	5 764	8 662	8 740
Ploughs Pługi	7 269	6 345	5 567	10 198	8 172	5 985	7 306	8 675	8 996	9 792
Cultivators Kultywatory ciągnikowe	2 863	1 072	1 212	5 048	7 979	18 827	27 426	31 378	35 672	38 512
Disc harrows Brony talerzowe	2 908	2 710	2 209	3 648	4 605	3 455	3 101	2 875	1 871	2 392
Rototillers Gleboğrafzarki	1 885	1 793	10 158		10 898	15 247	15 131	23 130	33 041	25 340
Fertiliser spreaders Rozsiewacze nawozów mineralnych	5 429	1 861	3 019	4 115	13 333	17 174	17 520	11 104	15 454	20 732
Manure spreaders Rozrzutniki obornika	518	675	*	*	*	5 434	4 544	7 217	4 204	6 029
Sowing machines Siewniki polowe	2 011	3 471	7 278	8 131	*	*	*	1 945	9 680	14 353
Potato planters Sadzarki do ziemniaków	5 682	4 155	2 959	4 044	5 286	3 605	2 409	3 185	2 385	1 365
Tractor mowers Kosiarki ciągnikowe	7 479	3 087	*	5 786		5 434	3 009	3 439	5 539	1 484
Tedders and rakes Przetraszacze i zgrabarki	9 464	*	4 053	*	8 015	8 142	6 093	3 847	7 442	10 552
Pick-up balers Prasy zbierające	2 548	5 421	9 046	8 597	8 855	7 380	9 421	6 693	7 155	8 752
Self propelled forage harvesters Kombajny	*	*	78	*	29	67	27	29	43	107
Harvester threshers Kombajny zbożowe	3 967	1 532	1 058	1 116	1 295	1 727	685	1 111	*	1 441

*data not available.

Source: data of Central Statistical Office [Production... 2004, 2005, 2007, 2009, 2011, 2013].

*brak danych.

Źródło: dane Głównego Urzędu Statystycznego [Production... 2004, 2005, 2007, 2009, 2011, 2013].

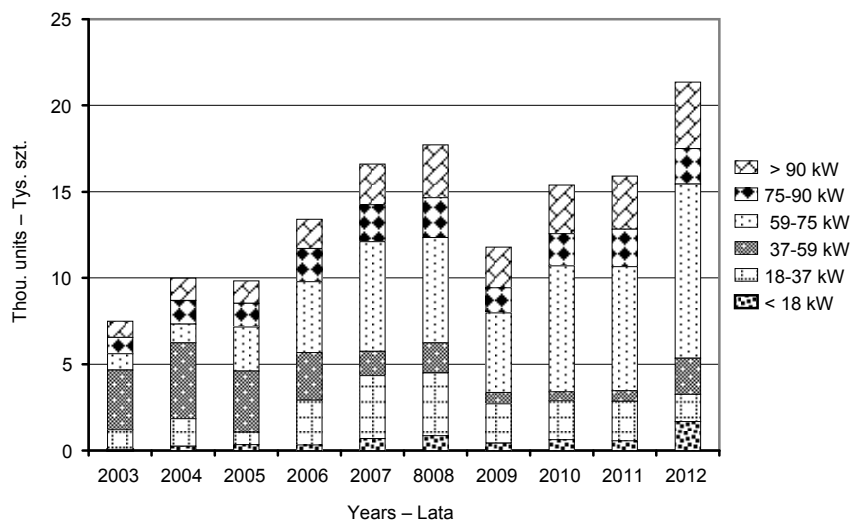


Fig. 1. Supply of tractors according to power of engines

Source: own elaboration basing on data of Central Statistical Office [Production... 2004, 2005, 2007, 2009, 2011, 2013], Pawlak [2010 a], Rynek... [2011, 2013].

Rys. 1. Podaż krajowa ciągników według mocy ich silników

Źródło: opracowanie własne na podstawie danych GUS [Production... 2004, 2005, 2007, 2009, 2011, 2013], Pawlak [2010 a], Rynek... [2011, 2013].

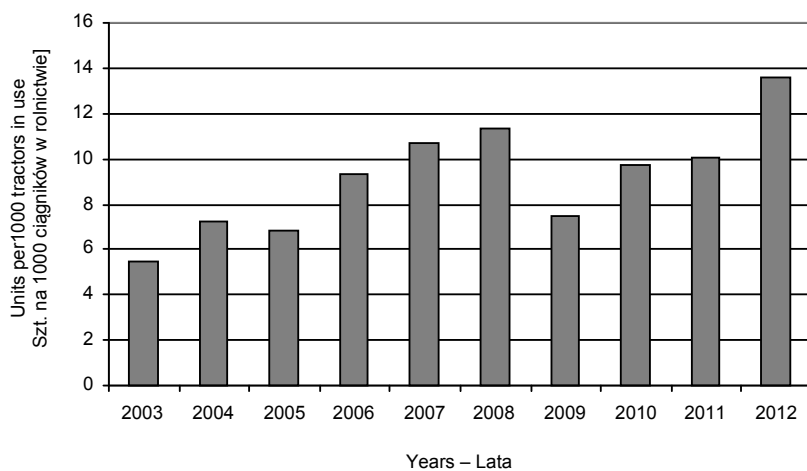


Fig. 2. Rate of the tractor fleet renovation in agriculture

Source: own elaboration basing on data of Central Statistical Office [Production... 2004, 2005, 2007, 2009, 2011, 2013], Rynek... [2011, 2013].

Rys. 2. Stopa odnawiania parku ciągnikowego w Polsce

Źródło: opracowanie własne na podstawie danych GUS [Production... 2004, 2005, 2007, 2009, 2011, 2013], Rynek... [2011, 2013].

increased almost 12 times. Increases in number of units supplied were observed also in cases of sowing machines – by 613.7%; self loading or unloading agricultural tractor trailers – by 547.4%, fertilizer spreader – by 281.9%, pick-up balers – by 243.5%, ploughs – by 34.7% as well as tedders and rakes – by 11.5%. Instead, the supply of tractor mowers decreased by 80.2%, potato planters – by 76.0%, harvester threshers – by 63.7% and disc harrows by 17.7% (Table 1).

In case of harvester threshers, the decrease was due to reduction of the share of second-hands, dominating in 2003. The reason of decreasing supply in case of potato planters was successively smaller area of potatoes planted in Poland.

Changes of demand for tractors and farm implements had different effect on production level of particular types of machinery. In cases of agricultural trailers, harvester threshers and some other machines the effect was positive. Instead, in spite of significant increase of demand for tractors, their production in 2012 was by 39.2% lower than in 2003 (Table 2). Dramatic drop in the number of tractors produced in Poland occurred already at the beginning of the 90's of 20th century and it was due to worsening of economic situation in agriculture, followed by decrease of demand. Facing lack of financial sources for purchases of brand-new equipment, farmers bought imported second-hands, and at the beginning – also from state and cooperative farms. At the same time failure in restructuring of Ursus and errors in its management caused successful loss of competitiveness on the market. The home competition appeared in a form of fitting-shops using parts of foreign makes tractors. After Poland's accession to the EU assembling of tractors using parts coming from the Union countries has become purposeless because of elimination of duty barriers. At present buyers of brand-new equipment are prosperous farms of high scale of production and considerable requirements towards a quality. This fact and progressive saturation of agriculture, at least on quantitative score, together with decreasing competitiveness of home tractor industry cause, that the demand growing after the accession has been satisfied by purchases of imported tractors, in many cases of high quality standards.

Table 2. Production of means of agricultural mechanization (units in years)
Tabela 2. Produkcja środków mechanizacji rolnictwa (sztuk w latach)

Products Wyroby	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1	2	3	4	5	6	7	8	10	11	12
Agricultural tractors Ciągniki rolnicze.	5 770	8 510	5 957	6 720	7 405	6 504	3 719	3 605	3 661	3 539
Agricultural trailers Przyczepy dla celów rolniczych	2 603	3 865	4 398	5 970	7 094	7 453	6 925	7 687	10 813	12 028
Ploughs Pługi	7 747	6 134	5 163	6 682	7 012	4 862	5 962	6 928	7 628	9 580
Cultivators Kultywatory ciągnikowe	2 281	2 315	1 596	2 286	2 669	3 582	4 517	4 413	5 682	6 271
Disc harrows Brony talerzowe	2 908	2 959	2 869	4 356	5 276	3 451	2 860	3 324	2 434	3 367

Table 2 – cont. / Tabela 2 – cd.

1	2	3	4	5	6	7	8	10	11	12
Other harrows Brony pozostałe	3 818	2 427	3 330	4 915	5 785	6 767	3 637	3 331	2 698	2 206
Rototillers Glebogryzarki	1 885	1 793	2 493	2 825	1 637	1 228	815	930	1 604	1 456
Fertiliser spreaders Rozsiewacze nawozów mineralnych	2 582	3 293	3 121	4 115	5 486	5 815	2 841	2 911	3 332	11 236
Manure spreaders Rozrzutniki obornika	671	555	*	*	*	5 484	4 519	4 835	3 893	5 397
Sowing machines Siewniki polowe	1 795	2 315	1 973	2 883	2 695	3 804	4 947	4 658	4 316	6 199
Potato planters Sadzarki do ziemniaków	6 148	4 880	3 561	5 118	6 095	4 442	3 586	4 391	3 695	3 094
Tractor field sprayers Opryskiwacze polowe, ciągnikowe	10 505	10 002	8 605	11 512	12 209	10 657	8 535	9 654	11 625	11 729
Tractor mowers Kosiarki ciągnikowe	5 429	5 068	5 500	5 786	5 859	4 992	5 516	4 314	8 613	10 004
Tedders and rakes Przetrasacze i zgrabiarki	9 674		6 280		10 577	9 985	7 492	5 424	8 249	12 673
Pick-up balers Prasy zbierające	3 417	4 247	7 774	8 730	8 686	8 095	8 605	8 100	9 433	11 005
including round balers w tym prasy zwijające	3 058	4 162	6 543	8 321	8 214	7 494	6 697	6 167	7 702	8 899
Harvester threshers Kombajny zbożowe	610	821	1 197	1 215	997	1 498	786	1 230	1 615	1 798
Potato diggers Kopaczki do ziemniaków	715	839	496	514	879	1 063	792	500	677	492
Potato harvesters Kombajny ziemniaczane	60	78	48	55	92	109	47	61	110	66
Steamers for solid fuels Parniki na paliwo stałe	29 345	19 245	13 089	12 575	12 760	11 570	9 475	7 132	6 348	7 832
Dryers for agricultural products Suszarnie rolnicze	166	320	319	719	280	446	248	207	536	368

*data not available.

Source: data of Central Statistical Office [Production... 2004, 2005, 2007, 2009, 2011, 2013].

*brak danych.

Źródło: dane Głównego Urzędu Statystycznego [Production... 2004, 2005, 2007, 2009, 2011, 2013].

The structure of tractors produced by their power significantly changed. In 2003 18-37 kW tractors dominated, followed by 37-59 kW ones, whilst in 2012 – 59-75 kW tractors were dominant, followed by 37-59 kW ones (Fig. 3).

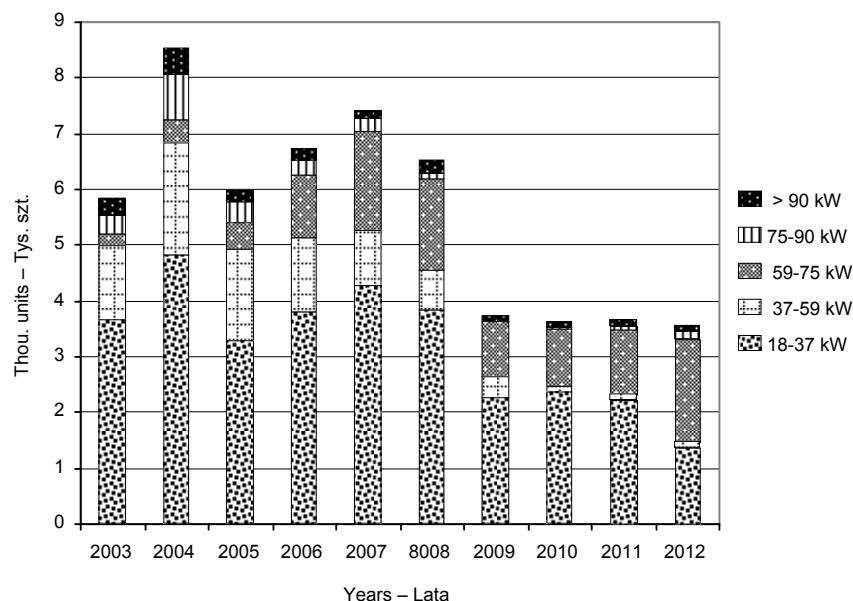


Fig. 3. Production of tractors according the power of engines

Source: own elaboration basing on data of Central Statistical Office [Production... 2004, 2005, 2007, 2009, 2011, 2013], Rynek... [2011, 2013].

Rys. 3. Produkcja ciągników według mocy silnika

Źródło: opracowanie własne na podstawie danych GUS [Production... 2004, 2005, 2007, 2009, 2011, 2013], Rynek... [2011, 2013].

Fall in the number of tractors produced in Poland caused that imported tractors achieved more and more important share in supplies on Polish market. In 2003 the share of imports amounted to 64.0% and in 2012 – 91.4% (Fig. 4).

However, the production of majority of means of agricultural mechanisation increased after Poland's accession to the EU (Table 2). The production of manure spreaders was in 2012 higher by 704.3% than in 2002, self loading or unloading agricultural tractor trailers – by 362.1%, fertilizer spreader – by 335.2%, field sowing machines – by 245.3%, pick-up balers – by 222.1% (of that round balers – 191,0%), harvester threshers – by 194.8%, tractor cultivators – by 174.9%, dryers for agricultural products – by 121.7%, tractor mowers – by 84.3%, tedders and rakes – by 31.0%, ploughs – by 23.7%, disc harrows – by 15.8 and tractor field sprayers – by 11.7%. Decreases were toted in cases of steamers – by 73.3%, potato planters – by 49.7%, harrows other than disc ones – by 42.2%, potato diggers – by 31.2% and rototillers – by 22.8%.

Weak but positive correlation has been found between the index values, showing relations between price of the set of 34 means of agricultural mechanisation and gross value added on tractors' supply in Polish agriculture (Fig. 5). It seems that possibility to use support funds, available for Polish farmers in frames of CAP cause, that increase of machinery prices, even as related to value of agricultural production did not hamper the investments in brand-new tractors. Thanks to the support farm machinery became less expensive for farmers having investment ability.



Fig. 4. Supply of tractors by their origin

Source: own elaboration basing on data of Central Statistical Office [Production... 2004, 2005, 2007, 2009, 2011, 2013], Rynek... [2011, 2013].

Rys. 4. Podaż krajowa ciągników według ich pochodzenia

Źródło: opracowanie własne na podstawie danych GUS [Production... 2004, 2005, 2007, 2009, 2011, 2013], Rynek... [2011, 2013].

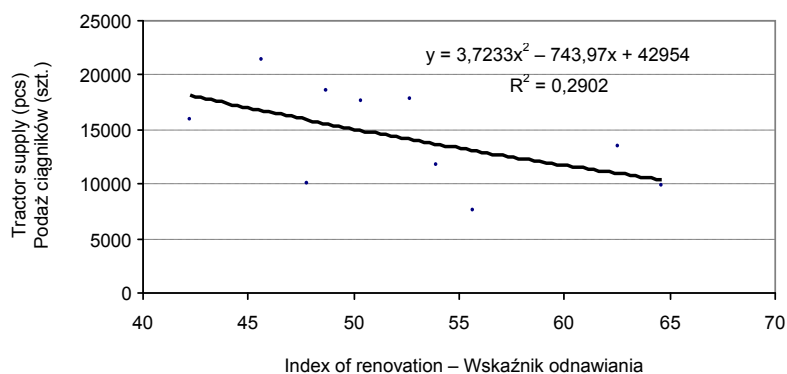


Fig. 5. Effect of the index value, showing relations between price of the set of 34 means of agricultural mechanization and gross value added on tractors' supply in Polish agriculture

Source: own elaboration basing on data of Central Statistical Office [Production... 2004, 2005, 2007, 2009, 2011, 2013].

Rys. 5. Wpływ wartości wskaźnika wyrażającego stosunek ceny zestawu 34 środków mechanizacji rolnictwa do wartości dodanej brutto w rolnictwie polskim na podaż ciągników w Polsce

Źródło: opracowanie własne na podstawie danych GUS [Production... 2004, 2005, 2007, 2009, 2011, 2013].

Stronger correlation was observed between the levels of gross value added achieved in Polish agriculture and the demand for agricultural tractors (Fig. 6). Supply of tractors increases along with growing agricultural production.

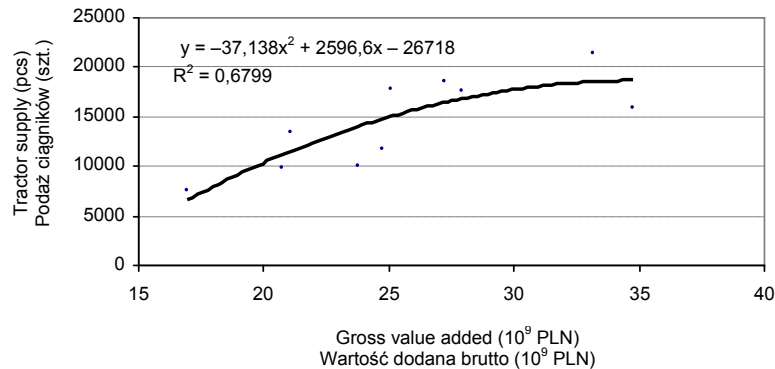


Fig. 6. Effect of the gross value added in Polish agriculture on tractors' supply
Source: own elaboration basing on data of Central Statistical Office [Production... 2004, 2005, 2007, 2009, 2011, 2013].

Rys. 6. Wartość dodana brutto w rolnictwie a podaż ciągników
Źródło: opracowanie własne na podstawie danych GUS [Production... 2004, 2005, 2007, 2009, 2011, 2013].

These shows that not only funds available thanks to CAP stimulate the investments in farm machinery. Also the level of agricultural production, which determines availability of necessary financial sources for farmers own share in purchases, is still very important. The investment ability depends then on the value of agricultural production.

CONCLUSION

After accession of Poland to the EU the demand for tractors and agricultural implements grew, followed by increasing supply of these means of production. In 2012, the supply of brand-new agricultural tractors was by 185.4% higher than in 2003 – last year before the accession. Also in cases of majority of other means of mechanization, the increases of supply were noted.

Within the years 2003-2012 the value of renovation index of tractor fleet in agriculture fluctuated but it was in 2012 by 149.3% higher than in 2003.

Changes in the demand for tractors and farm implements had different effect on production level of particular types of machinery. In spite of a significant increase of demand for tractors, their production in 2012 was by 39.2% lower than in 2003. Production of majority of other means of agricultural mechanisation was in 2012 higher than in 2003.

The downfall in the number of tractors produced in Poland caused that imported tractors achieved more and more important share in supplies on Polish market. In 2003 the share of imports amounted to 64.0% and in 2012 – 91.4%.

Positive correlation has been found between level of agricultural production and supply of brand-new tractors. The level of agricultural production determines availability of necessary financial sources for farmers own share in purchases and their investment ability.

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POLSKI RYNEK MASZYN ROLNICZYCH PO WEJŚCIU DO UNII EUROPEJSKIEJ – PRODUKCJA I PODAŻ ŚRODKÓW MECHANIZACJI ROLNICTWA

Streszczenie. Po wejściu Polski do Unii Europejskiej zwiększył się popyt na środki mechanizacji rolnictwa oraz podaż krajowa większości z nich. W 2012 roku dostawy ciągników fabrycznie nowych były o 185,4% wyższe niż 2003 roku. Wartość wskaźnika odnawiania parku ciągnikowego była w 2012 roku o 149,3% większa niż w 2003 roku. Mimo znacznego zwiększenia popytu na ciągniki ich produkcja w 2012 roku była o 39,2% mniejsza niż w 2003 roku. Spadek produkcji ciągników w Polsce spowodował sukcesywne zwiększanie udziału importu. W 2003 roku udział ciągników importowanych wyniósł 64,0%, a w 2012 roku – 91,4%. Produkcja większości pozostałych środków mechanizacji rolnictwa była w 2012 roku większa niż w 2003 roku. Wzrost ten w przypadku roztrząsaczy obornika wyniósł 704,3%, ciągnikowych przyczep rolniczych samozaładowczych lub samowyladowczych – 362,1%, rozsiewaczy nawozów mineralnych – 335,2%, ciągnikowych siewników polowych – 245,3%, pras zbierających – 222,1%, a kombajnów zbożowych – 194,8. Spadła produkcja parników – o 73,3%, sadzarek ziemniaków – o 49,7%, bron innych niż talerzowe – o 42,2%, kopaczek do ziemniaków – o 31,2%, a glebogryzerek – o 22,8%.

Słowa kluczowe: sprzęt rolniczy, podaż krajowa, produkcja

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